

REMARKS

Status of the Claims

Claims 25-35 are now present in this application. Claim 25 is independent.

Claims 14-22 and 24 have been canceled, claims 26-35 have been added.

The specification has been amended at page 24 to correct a mistranslation of the parent PCT application, PCT/JP2004/000403, which was recently identified. Specifically, the term "silver" has been replaced with the term "copper." A translator's declaration is attached hereto as evidence that the term "copper" actually appeared in PCT/JP2004/000403.

Support for new claims 26-33 and 35 are in the former claims 14-22 and 24. Support for claim 34 is a paragraph [0103] of US 2006/0127655 (US patent application publication no. of the present application).

No new matter has been added by way of the above-amendment. Reconsideration of this application, as amended, is respectfully requested.

Prior Art Based Issues

The Examiner has modified the previous rejection to include secondary references as follows:

Claims 14-22 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2003-004526-A (JP' 526) for the reason recited in the prior office action and evidenced by Mallory et al., USPN 6,723,431 (Mallory) or Migliorini et al., USPN 6,649,279 (Migliorini) or Touhsaent et al, USPN 5,827,615 (Touhsaent) or Tsai et al., USPN 6,472,081 (Tsai).

Applicants respectfully traverse the rejection.

In order to clarify the differences between the present invention and the teachings of the cited references, Applicants have limited the claims to the process of preparing the laminate.

(1) *Significant Effects of the Present Invention*

The present invention relates to a process for producing a laminate comprising a step of laminating a thin film on a polymer substrate, which has the specific cyclized rubber incorporated therein, by a dry film-forming method.

The present invention attains an effect of providing a laminate which has good adhesiveness between the thin film and the polymer substrate (paragraph [0041] of US 2006/0127655).

Based on the knowledge of the skilled artisan at the time of the present invention, the artisan would think that incorporating a cyclized rubber into the polymer substrate would weaken the adhesiveness compared to that of the laminate having a primer layer which contains the cyclized rubber formed on the polymer substrate. This is because the density of the cyclized rubber, which is the adhesive element, in the surface where the thin film is formed becomes weak.

However, as shown in Examples 1-4 (examples each of which illustrates a case where a primer layer containing the specific cyclized rubber is formed on a polymer substrate) and Examples 6-9 (examples each of which illustrates a case where the specific cyclized rubber is incorporated into a polymer substrate), the respective adhesiveness between the thin film and the polymer substrate is equivalent when the laminate where the cyclized rubber is incorporated into the polymer substrate and the laminate where the primer layer is formed on the polymer substrate are compared.

As explained, by incorporating the cyclized rubber, which is the specific material, instead of simply adding an adhesive material to the polymer substrate, the present invention attains the significant effect of providing a laminate in which the thin film and the polymer substrate have the equivalent adhesiveness to that of a case of using the primer layer.

(2) *Reference is Silent Regarding Adding the Cyclized Rubber to the Polymer Substrate in Producing a Laminate by Laminating the Thin Film on the Polymer Substrate by a Dry Film-Forming Method*

All of references JP '526, Mallory, Migliorini, Touhsaent, and Tsai are silent in adding a cyclized rubber to a polymer substrate when producing a laminate by laminating a thin film to the polymer substrate with a dry film-forming method. A detailed explanation is given below.

The Examiner states that paragraph [0029] of JP '526 discloses the use of the cyclized rubber as an adhesive layer 8 to adhere a deposition layer 5 to a transparent resin molded product 1 (referred as "molded panel 1" in the outstanding Office Action).

As explained in paragraph [0023] of JP '526, paragraph [0029] of JP '526 is the explanation of the "concurrent molding/transferring system" which uses a transfer material. The "concurrent molding/transferring system" is a method, as explained in paragraphs [0019] and [0020], in which a transfer material comprising a deposition layer or the like is sandwiched into a mold and the transfer material is adhered to a resin molded product surface concurrently with the production of the resin molded product in the mold.

In other words, JP '526 discloses simply that it is possible to use the cyclized rubber for the adhesive layer 8 as an adhering agent to adhere the transfer material comprising a deposition layer formed in advance to the transparent resin molded product 1. Thus, JP '526 is completely silent in explaining that the use of cyclized rubber is effective in forming the deposition layer directly to the transparent resin molded product 1.

Furthermore, paragraph [0047] of JP '526 describes that a decoration layer, which comprises the deposition layer 5, may be directly provided to the transparent resin molded product 1 without using the transfer material or the like. JP '526 further discloses many examples of layers which the decoration layer may have, but the adhesive layer 8 is not included therein. That is, JP '526 clearly explains that there is no need for using the adhesive layer 8 in directly providing a decoration layer, which comprises the deposition layer 5 or the like, to the transparent resin molded product 1. In view of this also, JP '526 should be regarded as not disclosing the effectiveness of using the cyclized rubber in forming a deposition layer directly to the transparent resin molded product 1.

Therefore, it is improper for the Examiner to consider that JP '526 uses the cyclized rubber in forming a thin film by dry film-forming method to the polymer substrate.

Further, JP '526 is completely silent in terms of incorporating a material for forming the adhesive layer 8 (such as a cyclized rubber) to the transparent resin molded product 1.

Therefore, it is also apparent that JP '526 is totally silent in incorporating the cyclized rubber into the polymer substrate.

Moreover, Mallory and other references disclose to add an adhesive material to a polymer substrate in order to improve adhesion between the polymer substrate and a resin layer, i.e., to improve adhesion between a resin and a resin.

However, it is apparent that the resin layer formed on the polymer substrate in Mallory and other references cannot be formed by applying the dry film-forming method used for thin layer lamination in the present invention.

Therefore, it is apparent that Mallory and other references are completely silent in adding the adhesive material to the polymer substrate when laminating a thin layer directly to the polymer substrate by the dry film-forming method.

In view of the above, the present invention, which is characterized in incorporating the cyclized rubber into the polymer substrate when forming directly the thin layer to the polymer substrate by the dry film-forming method, is not obvious even when JP '526, Mallory, Migliorini, Touhsaent, and Tsai are combined. Therefore, the present invention is not obvious over references and does not fall under 35 U.S.C. 103(a).

(3) *Mallory, Migliorini, Touhsaent and Tsai do not cure the deficiencies of JP '526*

The Examiner cites Mallory, Migliorini, Touhsaent, and Tsai and comments as follows: "it is well established in the art that adhesive material or adhesion promoting materials may be incorporated into the polymer substrate as opposed to, or in addition to, providing a separate layer of the adhesive material."

However, as these references merely disclose to add the adhesive material to the polymer substrate in order to improve the adhesion between the resins, they are inappropriate to cite as references against the present invention which uses the polymer substrate added with the cyclized rubber in order to improve adhesion between the polymer substrate and the thin film which is formed by the dry film-forming method.

Therefore, from this aspect also, the present invention is not obvious over the combination of JP '526, Mallory, Migliorini, Touhsaent, and Tsai.

(4) *The Inventive Process Provides a Level of Adhesion Which Would be Unexpected from Applying the Method of Adding the Adhesive Material to the Polymer Substrate Disclosed in Mallory and other references to JP '526*

There would have been a disincentive for the artisan to apply the method of adding the adhesive material to the polymer substrate, disclosed in Mallory and other references, to the polymer substrate of JP '526. Reasons for such a disincentive are as follows.

As explained above, the skilled person would normally think the laminate having the cyclized rubber incorporated in the polymer substrate has weaker adhesiveness between the polymer substrate and the thin film compared to that of the laminate having a primer layer which contains the cyclized rubber formed on the polymer substrate.

On the other hand, references such as Mallory and the like disclose the method of forming a layer of adhesive material to the polymer substrate and the method of adding the adhesive material to the polymer substrate in order to adhere the polymer substrate and the resin layer. However these references are completely silent about the fact that the respective adhesiveness between the polymer substrate and the resin layer becomes equivalent in these 2 methods.

Therefore, the skilled person, who becomes aware of the problem in obtaining a laminate, in which the adhesiveness between the polymer substrate and the thin film laminated by the dry film-forming method to the polymer substrate is very high, would not have selected to incorporate the cyclized rubber as an adhesive material to the polymer substrate.

As explained, even when Mallory and other references disclose a method to add an adhesive material to a polymer substrate, there is no incentive for the skilled person to apply the method to JP '526.

Nevertheless, even if the artisan were to incorporate the cyclized rubber as an adhesive material to the polymer substrate, the artisan would expect a reduction in adhesiveness by incorporating the cyclized rubber into the polymer substrate. As such, the fact that the adhesiveness remains essentially constant, as was found by the present inventors, would be unexpected. This evidence of unexpected results (as shown by comparing Examples 1-4 having the cyclized rubber as a separate tie layer having essentially the same adhesiveness as Examples 5-9 having the cyclized rubber incorporated into the substrate, as presently claimed) overcomes any *prima facie* case of obviousness.

From this also, the present invention is patentable over JP '526, Mallory, Migliorini, Touhsaent, and Tsai. Reconsideration and withdrawal of the rejection are respectfully requested.

Conclusion

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance.


In view of the above amendment, Applicant believes the pending application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Garth M. Dahlen, PhD, Registration No. 43,575 at the telephone number of the undersigned below to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Director is hereby authorized in this, concurrent, and future replies to charge any fees required during the pendency of the above-identified application or credit any overpayment to Deposit Account No. 02-2448.

Dated: April 12, 2010

Respectfully submitted,

By 

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Attachment: Translator's Declaration

Docket No.: 4670-0107PUS1
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Shizuo KITAHARA et al.

Application No.: 10/540,377

Confirmation No.: 9771

Filed: July 12, 2005

Art Unit: 1794

For: LAMINATE AND PROCESS FOR
PRODUCING THE SAME

Examiner: M. R. Jackson

TRANSLATOR'S DECLARATION

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Akihiko YAHASHITA, declare the following.

I am well acquainted with the English language and the Japanese language.

There has been a mistranslation of a word in the parent PCT Application No. PCT/IP2004/000403, which published as WO2004/065119A1. At page 14, line 28 to page 15, line 4 of WO2004/065119A1 is the following paragraph:

薄膜の材質としては、例えば、アルミニウム、亜鉛、ニッケル、ジルコニウム、
金、銅、錫、インジウム、チタニウム、クロムなどの金属；酸化ケイ素、酸化ア

ルミニウム、酸化マグネシウム、酸化ジルコニウムなどの金属酸化物；SiN、CrN、TiN、TiAlNなどの金属窒化物；C_xH_y（非晶質炭素膜を含む）を代表的な組成とするものなどが挙げられる。これらの材質の中でも、非晶質炭素膜において、薄膜の密着性が著しく改善される。

The proper translation of the above-paragraph is as follows:

--Examples of the material of the thin film include metals such as aluminum, zinc, nickel, zirconium, gold, copper, tin, indium, titanium and chromium; metal oxides such as silicon oxide, aluminum oxide, magnesium oxide, and zirconium oxide; metal nitrides such as SiN, CrN, TiN and TiAlN; and materials a typical composition of which is C_xH_y (which may be an amorphous carbon film). Of these materials, an amorphous carbon film causes the adhesiveness thereof to the thin film to be remarkably improved.--

At line 2 of this paragraph, the term "copper" correctly appears after the term "gold."

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

This 31st day of MARCH, 2010

By: 
Signature

AKIKO YAMASHITA
Name in Print